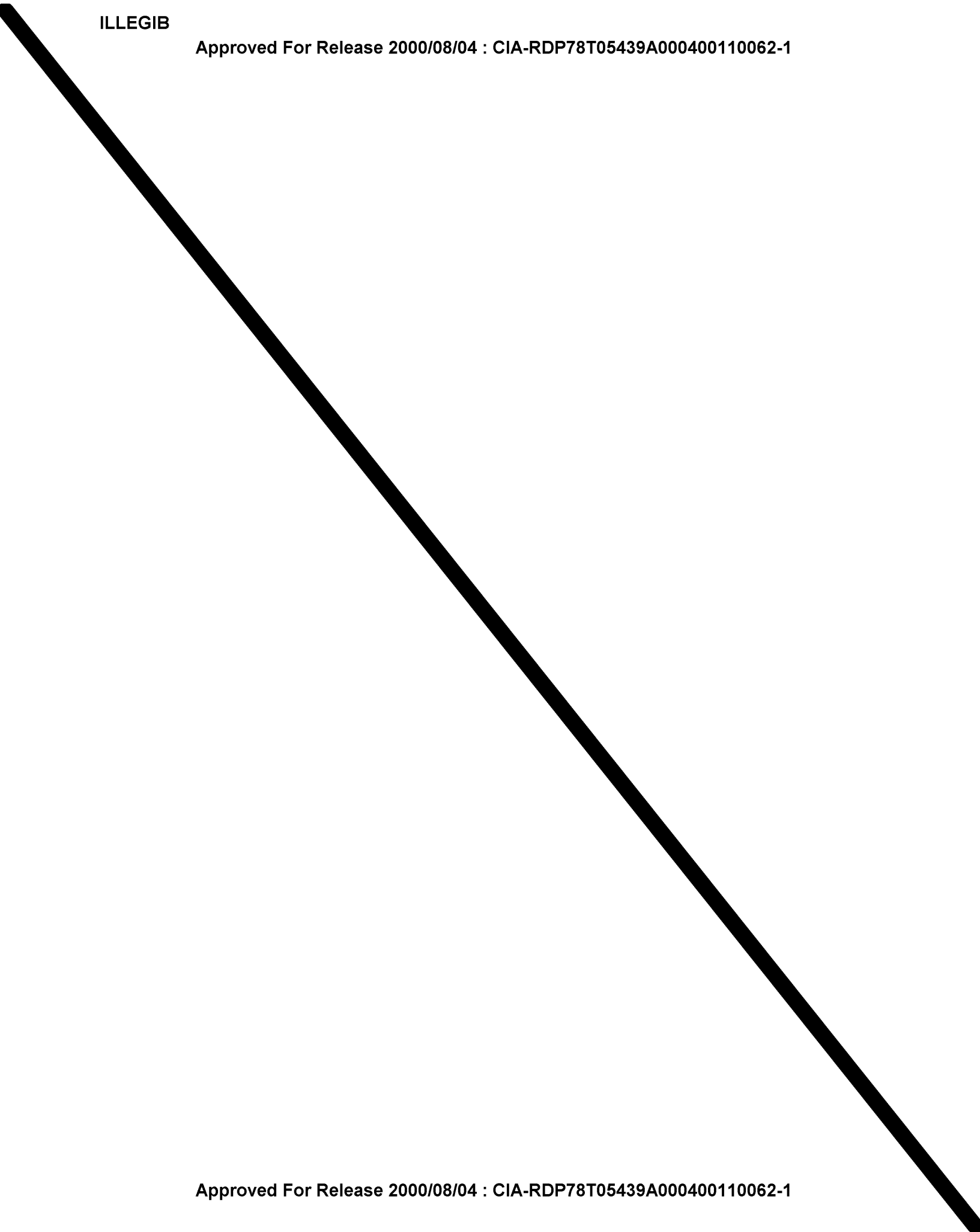

~~SECRET~~ NOFORN

S-14112

COPY No.

CONTROL ... USE ONLY

PHOTOGRAPHIC INTELLIGENCE MEMORANDUM

DECLASSIFICATION REVIEW BY NIMA / DoD

GP/I - 211

13 September 1955

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

NOFORN

CONTROL ... USE ONLY ~~SECRET~~

NORTHWEST EGYPT TERRAIN STUDY

This memorandum is for record purposes only. It includes the text portion of GP/I-211 presented to the requester in D/GG. The original map overlays were supplied to the requester and do not accompany copies of the report made for record purposes only.

NORTHWEST EGYPT TERRAIN STUDY

This memorandum presents a photographic analysis of that portion of northwest Egypt extending westward from El Alamein to Matruh and southward to include the Qattara Depression. The analysis was made to determine the location of areas suitable for emergency landing of aircraft, survival of personnel, and air-rescue operations. Areas have been selected on the basis of three principal considerations: terrain, water, and population. The optimum situation requires terrain suitable for aircraft landing; water, preferably fresh and nearby; and no population except at a remote distance. On the accompanying map overlays, areas suitable for both "wheels-down" and "wheels-up" landing have been indicated, as well as water sites that have been confirmed by photographic analysis.

For the purpose of this study, northwest Egypt is divided into three clearly defined physiographic regions: (1) a coastal plain, (2) a low, dissected plateau, and (3) the Qattara Depression.

The coastal plain, which is approximately 10 miles wide, is a maturely dissected area with low local relief, undulating surface, and braided stream channels. Perhaps 10 percent of the total area is composed of scattered patches of cultivation. Most of the population is found in such areas. The natural vegetation patterns are also fairly dense along the coast.

Owing to the undulating surface and relatively high population density, the coastal plain is generally considered unsuitable for

emergency landings. Water, however, is likely to be more readily available here than farther inland, and there are several World War II airfields or landing grounds in various stages of disuse and disrepair. Many World War II defenses were also located on the plain, but such areas are dangerous for landings unless they have been completely cleared of mines. Much of the water that collects in pools during the infrequent rains becomes brackish or saline within a few days. It is recommended, therefore, that aircraft operating in the coastal area be equipped with solar stills so that water, if found, could be made usable.

About 10 miles inland from the coast, the coastal plain terminates in a generally well-defined escarpment that marks the beginning of the plateau area. The plateau is maturely dissected, has a sandstone cap, and dips northward. On its southern flank the plateau ends just as sharply with another escarpment, which marks the irregular northern edge of the Qattara Depression. The plateau contains many wide shallow depressions and the caprock itself is fairly level, hard surfaced, and stony. Vegetation is sparse except in some wadies and along the escarpments. Only a few dependable water sites can be confirmed from photography.

In general the plateau has the best conditions for safe emergency landings because (1) it contains many depressions with flat bottoms composed of fine-grained materials that make good wheels-up landing surfaces, and (2) the sandstone caprock, though not as smooth as depression bottoms, frequently has a number of areas with a relatively

smooth, hard surface suitable for landings. In a few places, remnants of World War II airfields have been cleared of rocks. The plateau has few inhabitants, except possibly, during wet periods, when nomads with their flocks may be found in widely scattered localities. The area also contains depressions over which hard salt crusts or pans have formed. Such surfaces offer ideal wheels-down landing sites and are suitable for rescue operations. On the highly dissected plateau, however, it would be difficult for rescue aircraft to locate downed personnel unless they stayed with their plane.

A good indicator of the presence of water, salt or fresh, is vegetation. Some of the areas suitable for emergency landings are located near areas of vegetation. Caravan routes plainly visible on aerial photography would probably indicate areas where it would be safe to ditch.

The southern edge of the plateau presents a different problem. It is very badly dissected and its deep canyons with precipitious walls are extremely dangerous for emergency landings. Also, water is very scarce.

The Qattara Depression contains large salt lakes during most of the year and is surrounded by broad mud flats that are often impassable for both camels and men. However, at the foot of the abrupt escarpment, on the northern edge of the depression, coalescent alluvial fans border the mud flats and the lakes. These fans are made up of materials eroded from the steep cliffs. The coarsest material is near the base of the cliffs. This part of the fan supports sparse

vegetation. Between the vegetation and the mud is an area of fairly hard packed, fine material that is nearly level and would be ideal for emergency landing and rescue operations. The best source of water in this area is along the base of the escarpment, where the vegetation would provide shelter. However, these are also the localities where people are most likely to be encountered. On the map, several sources of fresh and salt water are indicated along the base of these cliffs, but none has been fully confirmed by an analysis of aerial photography.

The Qattara Depression itself forms a second emergency landing area. During most of the year, it is occupied by fairly large salt lakes. For ditching damaged aircraft in these lakes, the pilot and crew would have to be equipped with both rafts and solar stills. An aircraft resting on the relatively shallow bottom would probably remain visible and provide a landmark for rescue operations. Although the pilot and crew would be required to remain in rafts near the aircraft, they should be safe from nomadic tribes, since the lakes are surrounded by mud flats impassable by humans or camels. Air rescue could be accomplished by seaplane if there were sufficient water, otherwise by helicopter.

A final factor in the problem of emergency landings should be emphasized. A vast tract of the eastern section of the study area contains extensive lines of barbed wire, and other British World War II defenses. The defense line stretches from the vicinity of El Alamein on the coast to the Qattara Depression. The hazards are so great that it should be avoided if at all possible.